

AUSTRALIAN CAPITAL TERRITORY

Public Health Act 1997

Instrument No. 86 of 2000

**DETERMINATION OF A DRINKING WATER
QUALITY CODE OF PRACTICE**

Pursuant to Section 133 of the *Public Health Act 1997*, **I, MICHAEL JOHN MOORE**, Minister for Health and Community Care, do by this instrument, hereby determine that the Code of Practice at Schedule 1 to be a Drinking Water Quality Code of Practice for the Public Health Risk Activity of Operating a Drinking Water Utility for the purposes of the *Public Health Act 1997*.

DATED this Eighth day of February

Michael Moore

Minister for Health and Community Care

**DRINKING WATER QUALITY
CODE OF PRACTICE**

2000

<u>Index</u>	<u>Page Number</u>
Introduction	3
Scope	3
Interpretation	5
Part I - Water Quality Protocol	7
Publication of Annual Drinking Water Quality Reports	8
General Requirements	8
Specific Publication Requirements	8
Notification Requirements	8
Characteristics Required to be Published	9
Public Access to Information	11
Water Quality Testing - Requirements	11
Cryptosporidium and Giardia Monitoring	12
Catchment Monitoring	12
Drinking Water Quality	12
Laboratory Testing	13
Water Quality Improvement Plans	13
Area of Application	13
Transitional Arrangements	14
Part II - Water Incident Notification Protocol	15
Type 1 Incidents	17
Type 2 Incidents	19
Part III - Water Incident Response Protocol	20
Cryptosporidium and Giardia	21
Health Related Chemicals and Pesticides	25
Thermotolerant Coliforms	28

Introduction

This document is intended to provide a framework for reporting and water quality management relating to the supply of drinking water in the Australian Capital Territory. The Department of Health and Community Care has formulated this Code of Practice so that any risks associated with drinking water quality can be identified and managed to minimise the threat to the health of the people of the ACT.

The process of risk minimisation will be facilitated through the identification, evaluation and implementation of actions in order to reduce the risk to human health. In achieving the goal of protecting public health through risk management, scientifically sound, cost-effective, integrated actions are the Departments primary concerns while taking into account social, cultural, ethical, political, and legal considerations.

Scope

1. The supply of drinking water in the ACT is declared a 'A Licensable Public Health Risk Activity' under the *Public Health Act 1997*.
2. Operators of water systems (water utilities) are required to obtain a licence under the *Public Health Act 1997* and that license may include standard conditions.
3. The licence holder is be required to comply with this Code of Practice.
4. The Code of Practice consists of three sections; Australian Capital Territory Water Quality Protocol, Water Incident Notification Protocol and Water Incident Response Protocol.
 - I. The Australian Capital Territory Water Quality Protocol:
 - Outlines the technical requirements for water quality and reporting.
 - References the *Australian Drinking Water Guidelines*, taking into account local conditions and influences.
 - Contains the requirements for test frequency and result publication.
 - Ensures that water customers are provided with information relating to water quality to make their own assessment of the utility performance in relation to maintaining water quality.
 - Provides a bench mark from which to make assessments of the risks associated with drinking water quality.
 - II. Water Incident Notification Protocol:
 - Outlines the notification procedures the water utility is required to follow in the event of an incident of public health significance.
 - Addresses the risk identification element of the overall public health protection plan.
 - III. Water Incident Response Protocol:
 - Outlines the public health incident response procedures the water utility and the Department of Health and Community Care may

follow in the event of a public health incident concerning drinking water.

- Addresses the evaluation and implementation elements of the overall public health protection plan.

5. This Code of Practice was determined by the Minister under section 133 of the Public Health Act 1997 and is enforceable under that Act.
6. References to aesthetic characteristics contained in this document are for the purpose of providing public information and in some cases is an indication of health characteristics.

Interpretation

Action Officer - The body responsible for taking action in accordance with the incident response protocol in the event of a notification for a characteristic exceedence.

Australian Drinking Water Guidelines (ADWG) - The most current drinking water guideline published by the National Health and Medical Research Council and the Agriculture and Resource Management Council of Australia and New Zealand.

Chlorine Effectiveness - Means the number of chlorination system failures notifiable under Part II of this code.

CHO – Means the Chief Health Officer as defined in the *Public Health Act 1997*.

Customer – for this code, includes each of the following:

- (a) a person for whom a *utility service* is supplied by a *utility*;
- (b) a person who consumes water supplied by a *utility*;
- (c) a person who has contact with water supplied by a *utility*.

Customer Point of supply - The first tap after the customer's water meter.

DHACC – Means the Department of Health and Community Care.

Geographical Supply Area – A water network distribution area containing approximately 50,000 people and agreed, in writing, by the Chief Health Officer.

Health Related Chemicals - Those chemicals identified by the Australian Drinking Water Guidelines as having a public health impact and given a health guideline value.

High Public Health Risks (type 1 incidents) - Serious incidents that could cause risks to human health and require immediate notification to the Chief Health Officer.

License - A license issued under the *Public Health Act 1997* to a utility.

Medium Public Health Risks (type 2 incidents) - Lesser incidents that could cause risks to human health and require notification to the Chief Health Officer or a nominated Officer of the Department of Health and Community Care.

Nominated officer: - Means the Manager Environmental Health, HPS, or other officer as advised in writing by the CHO.

Notification - A telephone call to either the Chief Health Officer or a nominated Department of Health and Community Care Officer, followed by written confirmation within 24 hours.

Percentage (number %) Exceedence of ADWG - Means an incident where a characteristic level outlined in the Australian Drinking Water Guidelines is exceeded by a percentage of its value (eg. a 10% exceedence of 1 NTU would be 1.1 NTU).

pH Deterioration - Means any notifiable pH test result.

Public Health Risk Activity - Means an activity declared by the Minister to be a public health risk activity under section 18 of the *Public Health Act 1997*.

Raw Water- Untreated water held in the catchment area, dam and pipes up to the inlet to the water treatment plant.

Testing Agency - Any National Association of Testing Authorities (NATA) accredited laboratory.

Utility - A person providing a *utility service* within the Territory.

Utility service – for this code, each of the following is a utility service:

- (a) the collection or treatment of water, or both, for distribution through a water network;
- (b) the distribution of water through a water network;
- (c) a water connection service;
- (d) the supply of water from a water network to premises.

Water network – for this code, a water network consists of the infrastructure mentioned below used, or for use, in relation to any of the following purposes:

- (a) the collection and treatment of water for distribution by a person to the premises of another person;
- (b) the distribution of water by a person to premises of another person.

Infrastructure consists of the following:

- (a) water storages, mains and treatment plants;
- (b) pumps, facilities and equipment for distributing water, or monitoring or controlling the distribution of water;
- (c) pipes, equipment or other thing ancillary to any other part of the infrastructure.

AUSTRALIAN CAPITAL TERRITORY

DRINKING WATER QUALITY

CODE OF PRACTICE

PART I

WATER QUALITY PROTOCOL

Publication of Annual Drinking Water Quality Report

General Requirements

- 1.1 A water utility must produce and make public annual reports on their drinking water quality monitoring programs.
- 1.2 The reports must summarise the utility's water quality test results and compare them with this Code of Practice, the *Australian Drinking Water Guidelines* and the Public Health Risk Activity Licence conditions .
- 1.3 The reports must include sufficient information to enable the DHACC to assess the utility's general performance against the guidelines and Codes of Practice and enable water customers to make informed judgements about the quality of water they consume. The report must identify emerging problems and trends in drinking water quality management within the utility's water system and outline what priorities will be given to improving water quality.

Specific Publication Requirements

- 2.1 The report must present results of the water quality monitoring program conducted by the utility for each geographical supply area and include the number of samples taken.
- 2.2 A copy of the report for the preceding financial year must be forwarded to the Chief Health Officer by 30th September each year.

Notification Requirements

- 3.1 The utility must notify the nominated officer in the event of any incident described in part II of this Code of Practice within the nominated time period after the utility receives analysis results.
- 3.2 The utility must inform the Department of Health and Community Care of any other incidents involving water not covered by part II of this Code of Practice, that the utility could reasonably expect may pose a danger to human health.

Characteristics Required to be Published

4.1 The following water quality characteristics (as a minimum) must be published in regard to drinking water quality:

- Chlorine Effectiveness
- Lead
- Giardia
- Thermotolerant Coliforms
- pH
- Hardness
- Any key characteristics not related to health.
- Copper
- Pesticides
- Cryptosporidium
- Total Coliforms
- Alkalinity
- Turbidity
- Any key characteristic related to health.

The published report will identify the sampling location as being:

- raw water
- treated water
- customer point of supply

4.2.1 Key characteristics will include -

- any special surveys or additional testing undertaken throughout the previous twelve months at the request of the Chief Health Officer.
- general survey information obtained as a result of a Utilities own investigations. Sections 4.3 and 4.4 will not apply to non-routine Utility initiated surveys.

4.2.2 Key characteristics may also include –

- chemicals added because of regulatory requirements.
- naturally occurring elements in catchments where the guideline level for the characteristic is or is likely to be exceeded; and chemicals present because of past or present agricultural or forestry applications.
- chemicals or chemical compounds added to the water as a means of treatment or disinfection, or by products of these processes, including aluminium (total and acid soluble), chlorine residuals and trihalomethanes.

- all health related inorganic chemicals.

as determined by the Utility and approved by the Chief Health Officer before the beginning of each year's water quality monitoring program.

4.3 Information required by parts 4.1 and 4.2 of part I of this Code of Practice must be presented in a tabular form and identify, as a minimum for each geographical area:

- a) the test characteristic.
- b) the number of samples tested from each geographical area.
- c) the relevant guideline value in this Code of Practice and the *Australian Drinking Water Guidelines*.
- d) the minimum, median and maximum recorded value for each characteristic.
- e) the percentage of samples which fell within each of the guideline values recommended by this Code of Practice and the *Australian Drinking Water Guidelines* (characteristics with less than 12 samples will not require percentage reporting).

4.4 Additional Requirements:

Each report must contain -

- a) a description of any system failure or deterioration in water quality at the customer point of supply detected by the utility which posed a health risk or which affected water quality for an extended period, including those which have been reported to the CHO or the DHACC, or have required customers to be notified or public warnings to be issued.
- b) a description of any trends with the total or thermotolerant coliform results which have deteriorated compared with the previous year.
- c) a description of any trends with pH or turbidity results which have deteriorated compared with previous years.
- d) a summary of the actions taken to rectify deteriorations of water quality.
- e) a summary of water quality complaints received over the year, including the total number of complaints received and the nature of the complaints, by category, as well as an outline of the responses the utility have taken to rectify such complaints.

- f) identification of any laboratory test method used in determining water quality results that do not conform to an Australian Standard test method or other peer reviewed test method.

Public Access to Information

- 5.1 The utility must provide a copy of its annual water quality report free of charge to any member of the public requesting a copy.
- 5.2 Any request by a member of the public for a copy of the report should be met as soon as practicable upon receipt of the request.
- 5.3 The utility must ensure that copies of the report are available for members of the public by 14th October each year.
- 5.4 Reference must be made to the report's existence and availability in the utility's Annual Report.

Water Quality Testing - Requirements

- 6.1 The utility must conduct a comprehensive system performance monitoring program in accordance with the *Australian Drinking Water Guidelines*, taking into account local conditions.
- 6.2 In addition to the requirements of Part I section 6.1 of this Code of Practice the utility must undertake the following monitoring programs:
 - a) *Cryptosporidium* and *Giardia* monitoring in accordance with this Code of Practice
 - b) Pesticide monitoring in accordance with this Code of Practice
- 6.3 The following characteristics must be sampled at the customer point of supply in addition to those required by the *Australian Drinking Water Guidelines*:
 - a) Thermotolerant coliforms
 - b) Copper
 - c) Lead
 - d) Total coliforms
 - e) pH

plus any additional characteristics required to be monitored in the 'supply to customer' monitoring section in the *Australian Drinking Water Guidelines*.

Cryptosporidium and Giardia Monitoring

- 7.1 The utility must ensure that a test for *Cryptosporidium* and *Giardia* (at a minimum) is taken once each month at the Raw Water collection point. In the event of positive result frequency of testing must be increased and testing for *Cryptosporidium parvum* must also be undertaken.
- 7.2 If more than one catchment is in use, then the tests must be carried out in both catchments that are in use.
- 7.3 Any positive test result (positive meaning:- viable *C. parvum* detected) from a treated water collection point must immediately be re-sampled.
- 7.4 In the event of a filtration system failure (where applicable) water must be sampled from the filtration plant outlets.

Catchment Monitoring

- 8.1 The utility must make reasonable efforts to seek a Memorandum of Understanding (MOU) with the relevant water catchment management bodies for the purpose of information exchange in relation to activities in and around the catchments which may impact on water quality (including pesticides and agricultural chemical use).
- 8.2 The utility must publish in their annual report a list of MOU's it has entered into with the relevant catchment bodies and the nature of those memorandums.
- 8.3 The utility should undertake a survey of the catchments every 3 years to determine the nature and extent of likely contaminants entering the catchment and include the results of such surveys in the annual water quality report.

Drinking Water Quality

- 9.1 The utility must take all reasonable steps to supply drinking water to customers, which meets the aesthetic and health - related guideline values of the *Australian Drinking Water Guidelines*.
- 9.2 The utility must take all reasonable steps to supply water to customers which does not contain any element, organism or substance at a concentration value which would be detrimental to public health.
- 9.3 The utility must take all reasonable steps to supply water to customers which does not contain any element, organism or substance at a concentration value which in conjunction with any other element, organism or substance it contains would be detrimental to public health.

Laboratory Testing

- 10.1 The utility must provide the Department of Health and Community Care with an annual report on the test methods used in obtaining water quality results. The report must also outline any Quality Assurance systems the laboratory has in place and must include an outline of any non-compliance identified in the NATA reports for that year. This is to ensure the most effective test method is utilised and to allow the Department of Health and Community Care to conduct parallel testing using the same test methods. Non NATA approved tests must be highlighted.

Water Quality Improvement Plans

- 11.1 A utility must within 12 months of the commencement of this Code advise the CHO if it believes it is not able to supply drinking water from its water network which is within the quality guideline values of this Code or the ADWG and prepare a *Water Quality Improvement Plan* (WQIP), which when implemented, will permit the utility to achieve the quality guideline values.
- 11.2 The status of a Water Quality Improvement Plan being implemented by a utility must be reported in its Annual Drinking Water Quality Report.
- 11.3 A WQIP must be developed by the utility in consultation with the CHO and must:
- define the specific water quality issue(s) to be addressed and the outcomes to be achieved on implementation of the WQIP;
 - define the key actions to be taken by the utility to address the water quality issue;
 - provide detailed timing and key milestones for the key stages of the development and implementation of the WQIP;
 - define the methodology to be implemented to test and report on the effectiveness of the WQIP (once implemented) against the WQIP objectives;
 - be implemented within a period of time agreed with the CHO;
 - include a post implementation monitoring program to report on the effectiveness of the WQIP against the WQIP objectives.

Area of Application

- 12.1 This code will apply to water supplied from a water network by a Utility for the purpose of human consumption. All water supplied by a Utility will be considered as supplied for the purpose human consumption, unless other wise approved in writing by the Chief Health Officer.

Transitional Arrangements

13.1 The following transitional provisions will apply:

<i>Description – Code Provision</i>	<i>Commencement Date</i>
<i>Water Quality Protocols</i>	
Publication of Annual Drinking Water Quality Report	1 July 2000
Notification requirements	Immediately
Water Quality Testing Requirements	Immediately
Cryptosporidium & Giardia Monitoring	Immediately
Catchment Monitoring	1 July 2000
Drinking Water Quality	Immediately
Laboratory Testing (part of annual reporting process)	1 July 2000
<i>Water Incident Notification Protocols – all aspects</i>	Immediately
<i>Water Incident Response Protocols – all aspects</i>	Immediately
<i>Implementation of changes resulting from variations to the Australian Drinking Water Quality Guidelines</i>	By amendment to the Code and with an agreed implementation period between CHO and utility

AUSTRALIAN CAPITAL TERRITORY

DRINKING WATER QUALITY

CODE OF PRACTICE

PART II

WATER INCIDENT NOTIFICATION PROTOCOL

ACT HEALTH AND COMMUNITY CARE

WATER INCIDENT NOTIFICATION PROTOCOL

Type 1 - Incidents

These incidents are serious incidents that could cause risks to human health and require immediate notification to the Chief Health Officer. They are incidents which, if not immediately addressed, can lead to significant and acute harm to humans.

Type 2 - Incidents

These incidents are lesser incidents that could cause risk to human health and require notification to the Chief Health Officer or a nominated Officer of the Department of Health and Community Care. They are incidents which may lead to human illness in the medium to long term, but pose no immediate risk.

Type 1 - Incidents

REPORTING AGENCY:

- All incidents - Utility

Source	Characteristic	Criteria	Notification to:
1. Raw Water - Unfiltered Treatment	<i>Cryptosporidium</i>	Any viable <i>C. parvum</i> in a 10 litre sample	CHO - within 24 hours
2. Raw Water - Filtered Treatment	<i>Cryptosporidium</i>	> 10 viable <i>C. parvum</i> oocysts in a 10 litre sample	CHO - within 24 hours
3. Raw Water	Health related chemicals ¹ (excluding pesticides) Pesticides (all products known to be used in and around the catchment areas) ²	Any exceedence of ADWG health guideline Any exceedence of ADWG health guideline	CHO - within 24 hours
4. Customer Point of supply	Thermotolerant coliforms	Any thermotolerant coliforms detected	CHO - within 24 hours
Source	Characteristic	Criteria	Notification to:
5. Water exiting	Total coliforms	Total coliforms > 50% of samples	CHO - within 24 hours

¹ Those inorganic or organic chemicals for which the ADWG outlines a health guideline value.

² Those pesticides, which have been determined, as used in or around the catchment area, via the 3 yearly catchment survey referred to in clause 8.3 usage assessment.

<p>the Clear Water Storage Tank</p>	<p>Fluoride Chlorination</p>	<p>collected over 3 months from a specific location contain coliform bacteria</p> <p style="text-align: center;">OR</p> <p>3 or more consecutive samples from a specific location contain coliform bacteria</p> <p>≥ 7mg/litre</p> <p>Any chlorination system failure where there is no added chlorine for more than 1 hour.</p>	
<p>6. Filtered Water Entering the Distribution System</p>	<p>Turbidity</p>	<p>≥ 5 NTU or average values exceeding 1 NTU for more than 24 hours</p>	<p>CHO - within 24 hours</p>

Type 2 - Incidents

REPORTING AGENCY:

- All incidents - Utility

Source	Characteristic	Criteria	Notification to:
1. Raw Water	Pesticides ³ , Health related organic chemicals <i>Cryptosporidium or Giardia</i> Health related inorganic chemicals Cyanobacteria (<i>Microcystis</i> , <i>Oscillatoria</i> , <i>Spirulina</i> , <i>Anabaena</i> , <i>Anabaenopsis</i> and <i>Nodularia</i> Species)	Any detection Any detection > 10 fold increase above background concentrations > 2000 cells/mL	Nominated DHACC Officer - within 2 business days
2. Customer Point of supply	Total coliforms Trihalomethanes (THMs) pH	Total coliforms > 50% of samples collected over 3 months from a specific location contain coliform bacteria OR 2 or more consecutive samples from a specific location contain coliform bacteria 0.25 mg/Litre = 5.5 or = 11.0	Nominated DHACC Officer – within 2 business days

³ Those pesticides, which have been determined as used in or around the catchment area- via the 3 yearly catchment survey, referred to in clause 8.3.

AUSTRALIAN CAPITAL TERRITORY

DRINKING WATER QUALITY

CODE OF PRACTICE

PART III

WATER INCIDENT RESPONSE PROTOCOL

PROCEDURE 1a & 1b

***CRYPTOSPORIDIUM & GIARDIA* RESPONSE PROTOCOL**

Introduction

This protocol prescribes a method for risk assessment and minimisation that water utilities must refer to once a detection of *Cryptosporidium* or *Giardia* has been notified to the Chief Health Officer (CHO) as required under the Water Incident Notification Protocol section of this Code.

Procedure 1a

Positive Water Test - Raw Water

If a water utility receives a test result for a raw water sample that is positive for *Cryptosporidium* and contains:

- >10 oocysts/10 litres where the water will undergo subsequent filtration OR
 - Any oocysts where the water will not undergo any subsequent filtration.
1. Conduct an assessment of:
 - a) the accuracy of the test result,
 - b) the catchment for sources of human and animal contamination,
 - c) the turbidity/particle counts of raw water,
 - d) recent microbiological indicator results,
 - e) the possibility of microbial contamination,
 - f) recent events in the catchment that may have caused a change in water quality (e.g., storms, drought, calving, etc).
 2. Re-sample at the point of collection. The re-sampling should use enumeration and viability, to give an idea of the number and likely viability of any organisms that are present. The re-sampling should in the first instance focus on the area where the previous positive sample was detected. If widespread contamination is detected, the water utility should identify a wider area for sampling, in consultation with the Department of Health and Community Care.
 3. Treatment process management should be monitored to ensure efficient plant operation. Particular attention should be paid to:
 - a) Filter Operation
 - i) Loading Rate;
 - ii) Filter Overloading Resulting in Breakthrough;
 - iii) Filter Media Condition;
 - iv) Measures to reduce breakthrough during the ripening period at the beginning of a filter run;
 - v) Measures to reduce breakthrough at the end of a filter run; and
 - vi) Potential recontamination when backwash water is recycled.

Procedure 1b

If a water utility receives a test result for treated water that is positive for *Cryptosporidium* or is positive for *Giardia* the Utility must:

1. Conduct an assessment of:
 - a) the accuracy of the test result,
 - b) the integrity of the system, including disinfection and filtration,
 - c) the turbidity/particle counts of raw and finished water,
 - d) recent microbiological indicator results,
 - e) the possibility of microbial contamination pre- and post-treatment,
 - f) recent events in the catchment that may have caused a change in water quality (e.g., storms, drought, calving, etc).

2. Re-sample if the result indicates the presence of greater than 10 *Cryptosporidium* oocyst per 10 litres of water leaving the clear water storage or at any other point within the reticulation system. The re-sampling should use enumeration and viability, to give an idea of the number and likely viability of any organisms that are present. The re-sampling should in the first instance focus on the area where the previous positive sample was detected. If widespread contamination is detected, the water utility should identify a wider area for sampling, in consultation with the Department of Health and Community Care. The re-sampling may need to include raw water, to indicate the quality of water entering the treatment plant or distribution system.

The Department of Health and Community Care will respond to each instance of a positive result on a case-by-case basis. In many instances, if the results are not at levels which would cause concern and a notification from the water utility will lead to minor action by a Departmental Officer.

If Departmental officers are concerned about an increased risk of the occurrence of waterborne disease, they may institute enhanced surveillance to detect human disease. This surveillance may include:

1. contacting pathology laboratories to identify increases in requests for faecal tests or detection of specific organisms,
2. contacting local medical practitioners and hospitals to identify increases in consultations for diarrhoeal illness,
3. surveying nursing homes, and schools to identify increased reports of gastroenteritis,
4. contacting carers of immunocompromised patients to establish increases in gastroenteritis.

Remedial Action

If the CHO receives a report that indicates overt contamination or waterborne disease is detected, she/he will wish to urgently meet with the water utility. In these circumstances, the CHO may seek advice from experts, including public health physicians, laboratory staff and water treatment specialists. The Department of Health and Community Care media unit may be involved in drafting a press release advising

all people, or special community groups, such as immunocompromised people, to boil water or take other precautions. The utility must provide whatever assistance the CHO deems necessary in such events.

Boil Water Alert Notice

Immunosuppressed Persons

Cryptosporidium parvum can cause high levels of illness and in some cases death in immunosuppressed persons especially persons infected with HIV and low Cd4 counts. Persons with haematological malignancies, receiving treatment for cancer and renal and bone marrow transplant recipients may also be at increased risk from severe disease.

If test results have indicated that *Cryptosporidium* is present in significant levels within the reticulation system and may be consumed by immunosuppressed persons, all water consumed by those persons should be boiled and allowed to cool prior to consumption.

A slightly lesser risk applies in the case of case of *Giardia* but the same principals equally apply and a Boil Water Alert Notice may also be issued for immunosuppressed persons.

In the event of a positive test result at the customer point of supply a Boil Water Alert Notice may be issued for immunosuppressed persons, in the event of which General Practitioners, health care facilities, nursing homes and members of advocacy groups for immunosuppressed persons will be issued with a copy of the notice and information material on risk reduction.

General Public

Where this protocol has been followed and indicators suggest the presence of *Cryptosporidium* or *Giardia* within the water reticulation system such that drinking water may pose a risk to public health a general Boil Water Alert Notice may be issued. When issuing a Boil Water Alert notice the CHO will consider the following indicators:

- i) the concentration of oocysts or cysts in the water
- ii) the number of positive notifications for *Cryptosporidium* or *Giardia* received from pathology laboratories and doctors (including anecdotal illness complaints)
- iii) the spatial density and distribution of notifications in relation to the water source
- iv) any inadequacies in the water treatment provided or in the operation of the water treatment process that can not be immediately addressed
- v) the identification of any contamination source or indicator

<p>NOTE: A test result which indicates low level concentrations of <i>Cryptosporidium</i> or <i>Giardia</i> in finished customer point of use water is not, in its self, a reason for the issuance of a Boil Water Alert Notice.</p>

Withdrawal of a Boil Water Alert Notice

The CHO, taking into account those indicators listed above, shall determine when a Boil Water Alert Notice should be withdrawn. The Notice will only be withdrawn once the risk to public health has been removed.

PROCEDURE 2

HEALTH RELATED CHEMICALS & PESTICIDES RESPONSE PROTOCOL

Introduction

This protocol prescribes a method for risk assessment and minimisation that water utilities must refer to once a detection of a health related chemical or pesticide has been notified to the Chief Health Officer as required under the Water Incident Notification Protocol section of this Code.

Health Related Chemicals and Pesticides

Health Related Chemicals are chemicals, other than pesticides, which the Australian Drinking Water Guidelines (ADWG) have specified and defined a recommended health concentration, exceedences of which, health concerns may arise.

Pesticides include agricultural chemicals such as insecticides, herbicides, nematicides, rodenticides and miticides. The ADWG also sets out a recommended health level of pesticide concentration outside which health risks may arise.

Procedure 2

2(a) Positive Water Test - Raw Water

If a water utility receives a notifiable test result for Health Related Chemicals or Pesticides levels above ADWG health values, the utility must:

1. Conduct an assessment of:
 - a) the accuracy of the test result
 - b) the catchment for sources of contamination
 - c) the activities carried out in and around the catchment which involve or may have involved the use of health related chemicals or pesticides
 - d) recent test results for that chemical
 - e) the use of any chemicals in or around the area of the catchment (which have not been identified in previous chemical and pesticide assessments)
2. Re-sample at the point of collection if the result indicates a higher value than the health value ADWG level. The re-sample should in the first instance focus on the area where the previous positive sample was detected. If wide spread contamination is detected, the water utility should make all efforts to identify the source of the contamination, in consultation with the Department of Health and Community Care.
3. A standard number (as determined by ADWG) of random samples should be taken at the point of customer supply in order to determine the amount of chemical or pesticide, if any, present in the customer supply. In the event of a confirmed test result above the health value an immediate re-sample should be undertaken at the same points of use.

Remedial Action

In the event of two confirmed test results which exceed the health value for health related chemicals or pesticides the following public health risk dependant action(s) may be taken by the CHO:

1. Alternate Supply Order - in the event of a limited affected area the CHO may order the utility to provide an alternate supply of potable water for customer consumption (eg. alternate reservoir, bottled drinking water or access to water tankers). If the affected area is not limited then an Alternate Supply Order may be issued for all customers, that advises customers of the public health risk in consuming the water and the need to use alternate bottled supply.
2. Decontamination Order - in the event of the utility and / or the Department of Health and Community Care determining the source of contamination and implementing control measures which reduce concentration of the chemical / pesticide, the CHO may order the affected distribution system to be flushed and re-sampled. If the sample returns a satisfactory result then no further action may be required and Alternate Supply Orders may be lifted.
3. Limited Decontamination Order - in the event of the utility and / or the Department of Health and Community Care determining the source of contamination is limited to a small area of the distribution system, the CHO may order the area to be isolated and decontaminated.

The utility must provide whatever assistance the CHO deems necessary in such events.

2(b) Positive Water Test - Customer Point of Supply

If a water utility receives a positive test result for Health Related Chemicals or Pesticides levels above ADWG health values, the utility must:

1. Conduct an assessment of the accuracy of the test result.
2. Re-sample at the point of collection if the result indicates a higher than health value ADWG level. The re-sample should in the first instance focus on the area where the previous positive sample was detected. If wide spread contamination is detected, the water utility should identify a wider area for sampling, in consultation with the Department of Health and Community Care.
3. A standard number (as determined by ADWG) of random samples should be taken at the point of customer use in order to determine if an amount of chemical or pesticide is present at any other points of customer supply. In the event of a confirmed test result above the health value an immediate re-sample should be undertaken at the same points of use.

Remedial Action

In the event of two confirmed test results which exceed the health value for health related chemicals or pesticides the following public health risk dependant action(s) may be taken by the CHO:

1. Alternate Supply Order - in the event of a limited affected area the CHO may order the utility to provide an alternate supply of potable water for customer consumption (eg. alternate reservoir, bottled drinking water or access to water tankers). If the affected area is not limited then an Alternate Supply Order may be issued for all customers, that advises customers of the public health risk in consuming the water and the need to use alternate bottled supply.
2. Decontamination Order - in the event of the utility and / or the Department of Health and Community Care determining the source of contamination and implementing control measures which reduce concentration of the chemical / pesticide, the CHO may order the affected distribution system to be flushed and re-sampled. If the sample returns a satisfactory result then no further action may be required and Alternate Supply Orders may be lifted.
3. Limited Decontamination Order - in the event of the utility and / or the Department of Health and Community Care determining the source of contamination is limited to a small area of the distribution system, the CHO may order the area to be isolated and decontaminated.

The utility must provide whatever assistance the CHO deems necessary in such events.

PROCEDURE 3

THERMOTOLERANT COLIFORMS RESPONSE PROTOCOL

Introduction

This protocol prescribes a method for risk assessment and minimisation that water utilities must refer to once a detection of thermotolerant coliforms has been notified to the Chief Health Officer as required under the Water Incident Notification Protocol section of this Code.

Thermotolerant coliforms

Coliform organisms are used as indicators of faecal contamination of drinking water supplies, or as indicators of the breakdown of contamination control mechanisms. Thermotolerant coliforms are organisms which have the same fermentative properties at 44 - 44.5 °C, they are generally used to indicate the presence of pathogens and cleanliness of the water supply.

Procedure 3

Positive Water Test - Customer Point of Use

If a water utility receives a positive test result for Thermotolerant (faecal) coliforms, the utility must:

1. Conduct an assessment of:
 - a) the accuracy of the test result
 - b) the disinfection and water treatment systems to ascertain if any performance problems or interruptions have occurred in the previous month
 - c) recent test results for thermotolerant (faecal) coliforms (raw and treated)
 - d) the local distribution system to ascertain if any leaks, cross-connections or back-flows have occurred
 - e) the incidence, if any, of sewage spillage around the water treatment plant or local distribution system
 - f) the quality of raw water entering the treatment plant
2. Re-sample at the point of collection. The re-sample should in the first instance focus on the area where the previous positive sample was detected. If wide spread contamination is detected, the water utility should identify a wider area for sampling, in consultation with the Department of Health and Community Care.
3. A standard number (as determined by ADWG) of random samples should be taken at the point of customer use in order to determine the amount of contamination, if any, present in the rest of the customer supply and distribution system. In the event of confirmed test results an immediate re-sample should be undertaken at the same positive points of use.
4. Raw water should also be sampled in order to eliminate it as a possible source of the contamination and / or insure the integrity of the treatment and disinfection process.

Remedial Action

In the event of two confirmed thermotolerant (faecal) coliform test results the following public health risk dependant action(s) may be taken by the CHO:

1. Decontamination Order - the CHO may order the affected distribution system to be treated with increased levels of chlorination, flushed and re-sampled. If the sample returns a satisfactory result then no further action may be required.
2. Limited Decontamination Order - the CHO may order the area of the affected distribution system to be isolated and decontaminated through increased chlorination and flushing. If post-flushing re-sampling indicates satisfactory results then no further action may be required.
3. Limited Boil Water Alert Notice - In the event of a positive test result at the customer point of use a Boil Water Alert Notice may be issued for immunosuppressed persons, in the event of which General Practitioners, health care facilities, nursing homes and members of advocacy groups for immunosuppressed persons will be issued with a copy of the notice and information material on risk reduction.
4. General Boil Water Alert Notice - Where this protocol has been followed and indicators suggest that the presence of thermotolerant (faecal) coliforms in customer point of use drinking water poses a risk to public health a general Boil Water Alert Notice may be issued. When issuing a Boil Water Alert notice the CHO will consider the following indicators;
 - i) the number of positive notifications for gastroenteritis received from pathology laboratories and doctors (including anecdotal illness complaints)
 - ii) the spatial density and distribution of notifications in relation to the water source
 - iii) any inadequacies in the water treatment provided or in the operation of the water treatment process that can not be immediately addressed
 - iv) the identification of any contamination source or indicator
5. Withdrawal of a Boil Water Alert Notice - The CHO, taking into account those indicators listed above, shall determine when a Boil Water Alert Notice should be withdrawn. The Notice will only be withdrawn once the risk to public health has been removed.

The utility must provide whatever assistance the CHO deems necessary in such events.